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A Comparison of College Affordability Indexes among City, Suburban, Town, and Rural Public Community Colleges

Lee Walter

Louis Glover

Madeline Justice

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During the past 50 years, community colleges have increased in number and evolved to meet the changing needs of an increasingly diverse student population. No other segment of postsecondary education has been more responsive to the needs of its community (Kasper, 2002). Community colleges grant associate's degrees normally requiring 2 years of full-time study for completion. Enrollment at public 4-year colleges and universities nearly doubled from 1965 to 1999, while enrollments at public community colleges have increased approximately 5-fold (Kasper).

Although average community college tuition and fees have outstripped inflation, these tuition and fees have increased at a slower pace than have tuition and fees at public 4-year colleges. Accordingly, community colleges have emerged as an affordable alternative for students considering the pursuit of postsecondary education and workforce training. Though tuition at public community colleges is generally less than tuition at public 4-year colleges and universities, discrepancies appear to exist in the cost of attending community colleges in urban areas, suburban areas, and rural areas. Differences based on the degree of institutional urbanization appear to have an impact on the accessibility and affordability of community colleges. While geographic location is expected to have an impact on accessibility, geographic locations may also have an unexpected influence on community affordability.

Working-class students throughout the United States have increasingly discovered the average price of 4-year colleges to be out of reach. Growing numbers of these students have chosen to enroll in community colleges (Burd, 2006). Many viewed these institutions as a cost-effective way to jump-start the pursuit of a bachelor's degree. As modern employers emphasized the acquisition and updating of technical skills, lower tuition rates served to make community colleges an appealing option. According to Mercer (1994), community colleges enrolled about 60% of the nation's college students, and were predicted to enroll an increasing percentage of students. Because more students from diverse geographic areas were found to enroll in community colleges, the comparison of community college affordability indexes based on the institution's degree of urbanization is essential to determine if community college affordability indexes varies by geographic location.

This study proposed to obtain and analyze public 2-year community college affordability index data based upon specified urbanization criteria.

This study focused on the following 2 research questions:

1. What was the extent of college affordability indexes (CAI's) for public US community colleges by urban centric codes of city, suburban, town, and rural?

2. Did significant differences exist in college affordability indexes (CAI's) assessed between and among public community colleges based on the urban centric codes of city, suburban, town, and rural?

The following hypothesis was examined at the 0.05 significance level:

No significant differences existed in college affordability indexes (CAI's) between and among US public community colleges based on the urban centric codes of city, suburban, town, and rural.

This research attempted to develop a systemized comparison of affordability indexes of U.S. public community colleges based upon defined geographic status as designated by the IPEDS's degree of urbanization classification system (NCES, 2007a). The existing classifications are: city–large, city—midsize, city—small, suburb—large, suburb—midsize, suburb—small, town—fringe, town—distant, town—remote, rural—fringe, rural–distant, and rural–remote. These 12 classifications were reduced to the 4 major classifications of city, suburb, town, and rural. College affordability indexes from 1,021 U.S. public community colleges were sorted into categories based on these classifications and analyzed to determine if significant differences actually did exist in affordability indexes for the designated classifications of city, suburb, town, and rural. If significant differences existed among the classifications, additional statistical analyses would be conducted to determine to what degree the differences existed. Implications of the findings were examined to guide policy and practice at the various institutions and at the federal, state, and local levels.

An exhaustive search of the literature spanning nearly 3 decades (1980-2007) indicated a dearth of research in the area of college affordability index analysis based on geographic locations as defined by IPEDS. Research had been conducted on college affordability indexes for U.S. public community colleges and associated political implications, but investigations into the degree of community college affordability index differences based upon the degree of urbanization (urban-centric locale) had not been conducted at the time of this study.

A study of the differences among U.S. public community college affordability indexes based on the institutional degree of urbanization could provide numerous potential applications. The study could assist public community college students in selection of a community college based on a preferred location in a city, suburb, town, or rural area. The study could provide useful data to guide future researchers who seek to analyze patterns in community college affordability indexes based on geographic locations. The study could aid policy makers as to the degree of funding provided to public community colleges.

Understanding the similarities and differences in college affordability indexes between and among rural, town, suburban, and city public community colleges could inform local, state, and national policymakers in extending access to all types of institutions. A thorough understanding of geographic differences and similarities CAI's could help all interested parties—administrative, consumer, and political—to better comprehend the underlying rationale of a community college's student tuition and fee assessment.

This study sought to obtain and analyze community college affordability index data based upon specified urbanization criteria. The study classified selected U.S. community colleges based upon defined population demographics used by the IPEDS. The IPEDS is the core postsecondary education data collection program for the National Center for Education Statistics (NCES), which operates under the U.S. Department of Education. Data are collected from all primary providers of postsecondary education in the country in areas including enrollments, program completions, graduation rates, faculty, staff, finances, institutional prices, and student financial aid. The IPEDS includes only those institutions open to the general public. Data on enrollment, finance, and other components from such locations or

training sites are incorporated into the information reported by the community college as a system. The IPEDS collects information on institutional characteristics, completions, 12-month enrollments, human resources, fall enrollment, finance, student financial aid, and graduation rates.

Data were obtained from the IPEDS maintained by the NCES (NCES, 2007b). Data were collected for the 2006 universe of institutions for Fall 2006 according to the 12 extractions of city—large, city—midsize, city—small, suburban—large, suburban—midsize, suburban—small, town—fringe, town—distant, town—remote, rural—fringe, rural—distant, and rural—remote. The 3 sub classifications for city, suburban, town, and rural where then combined within respective major classifications to create the indicated 4 major urbanization categories. Databases were compiled of federal affordability indexes for selected U.S. public community colleges. The data was categorized into the 4 major categories of city, suburban, town, and rural. The classifications were coded 1 (city), 2 (suburban), 3 (town), and 4 (rural). A multifactor analysis of variance (ANOVA) was utilized to analyze and interpret results. Significance levels were set at 0.05. The ANOVA was used to determine if differences existed between and among the mean college affordability indexes of selected U.S. public community colleges. Post hoc tests were to be used at the second stage of the analysis of variance if the null hypothesis were rejected (Klockars et al., 1995). The question of interest at this stage was which groups significantly differed from others with respect to the mean.

Definitions of Term

The following term was defined according to its use in this study:

College Affordability Index (CAI): This variable was calculated as the percentage increase in the tuition and fees charged for a first-time, full-time, full-year undergraduate student between the first and last of the 3 most recent preceding academic years divided by the percentage increase in the Consumer Price Index from the same period of time (NCES, 2007a).

Presentation of findings

The research sought to determine if significant differences existed in college affordability indexes (CAI's) between and among US public community colleges in city, suburban, town, and rural areas, and if significant differences existed, to what extent did they exist. Descriptive analysis of CAI's follows for the 1,021 US public community colleges contained in the IPEDS data base.

This study focused on the following 2 research questions.

1. What was the extent of college affordability indexes (CAI's) for public US community colleges by urban centric codes of city, suburban, town, and rural?

2. Did significant differences exist in college affordability indexes (CAI's) assessed between and among public community colleges based on the urban centric codes of city, suburban, town, and rural?

Research question 1 provided the following descriptive data. Of the 1,021 community colleges, 304 were classified as city community colleges, 187 were classified as suburban community colleges, 238 were classified as town community colleges, and 292 were classified as rural community colleges. The research sought to determine if significant differences existed in college affordability indexes between and among community colleges in cites, suburban areas, towns, and rural areas, and if significant

differences existed, to what extent did they exist. The College Affordability Index (CAI) compares the increase in an institution's tuition over a three-year period to the Consumer Price Index (CPI).

Descriptive analysis of college affordability indexes follows for the 1,021 community colleges contained in the IPEDS data base.

An analysis of IPEDS data indicated that for community colleges with a city urban-centric locale the mean CAI was 1.3667. The mean CAI for community colleges with a suburban urban-centric locale was 1.3153. The mean CAI for community colleges with a town urban-centric locale was 1.5676. Community colleges with a rural urban-centric locale had a mean CAI of 1.3043. The mean CAI for all urban-centric locates was 1.3869. Table 1 contains additional descriptive data including standard deviation and standard error calculations. The computed mean CAI's are utilized by the United States Department of Education (USDE) to examine increased tuition costs for institutions with a CAI of 2.0 or higher. These colleges must submit a report to the USDE which must include: (1) an explanation of the factors contributing to the price increase; (2) a management plan stating specific steps the institution is taking and will take to reduce its CAI; (3) an action plan, including a schedule, for reducing increases; and (4) if another entity controls tuition and fee increases, in whole or in part, a description of the entity.

A test of homogeneity of variances among CAI's yielded a Levene statistic of 1.016 and a p-value of 0.385 (Table 2) which was well within acceptable bounds. Subsequently a multi-factor analysis of variance among CAI's yielded an F value of 0.949 and a p-value of 0.416. This p-value indicated that no significant differences based on urban-centric locales thus the post hoc assessment was not required. Table 3 contains the multi-factor analysis of variances along with additional information including sum of squares, degrees of freedom, and mean squares calculations.

Examination of college affordability indexes (CAI's) identified no differences based upon urbanization of the institutions; however, the question might be raised as to the findings of research question 1 in regard to this area. These findings ranged from a low of 1.3043 at rural colleges to a high of 1.5676 at town colleges. What should these values be? Are these boundaries acceptable? Where is tuition headed? Do these numbers indicate that many states have begun to abandon their community systems and shift funding of these institutions to the student populations? Simply noting that these colleges have increased tuition at a homogenous rate is not enough. Again, further research is required.

The study identified no differences in college affordability indexes (CAI's). Recommendations for further study are as follows.

1. How has geographic remoteness affected educational access? Are students living in rural remote regions denied or provided limited educational access? Are students living in inner cities denied or provided limited educational access? What of those living in suburbs and towns? Studies should examine the availability of educational programming based on urban centric locales.

2. How rapidly are tuition rates rising? Are the CAI's for public 2-year community colleges appropriate? How do these stack up against other segments of the educational community? Studies should examine these issues.

College Affordability Indexes 2006

Urban-Centric Locale	N	Mean	St. Deviation	Std. Error
City	327	1.3667	2.98303	0.16496
Suburban	213	1.3153	1.59370	0.10920
Town	271	1.5676	1.76741	0.10736
Rural	329	1.3043	1.38776	0.07651
Total	1,140	1.3869	2.07979	0.06160

2

Levene Test of Homogeneity of Variances of CAI's for 2006

Levene Statistic	df1	df2	Significance
1.016	3	1,136	0.385

Table 3

Multi-Factor Analysis of Variance of CAI's for 2006

	Sum of Squares	Df	Mean Square	F	Significance
Between Groups	12.3	3	4.108	0.949	0.416
Within Groups	4,914.5	1,136	4.326		
Total	4,926.8	1,139			

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on a 4-year degree. Chronicle of Higher Education, p. A23. Retrieved from Academic Search Complete database.

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